

WHAT IS CLAIMED IS:

1. A pressure activated valve for a three way connection to an inlet line, an outlet line and a secondary line, the valve comprising:

5 a body comprising an inlet, an outlet and a secondary connection, the body further comprising a seal seat disposed between the secondary connection and both the inlet and the outlet,

10 the body being flexibly connected to a plug seal, the plug seal being disposed between the seal seat and both the inlet and the outlet, the plug seal being movable between an open position spaced apart from the seal seat and a closed position against the seal seat thereby isolating the secondary connection from both the inlet and the outlet.

15 2. The valve of claim 1 wherein the body further comprises an opening to the atmosphere,

the plug seal being connected to a shaft, the shaft being connected to a flexible member so that the shaft is disposed between the flexible member and the plug seal, the flexible member being connected to the body at the opening so that the flexible member seals the opening.

20 3. The valve of claim 2 wherein the shaft is semi-rigid.

4. The valve of claim 2 wherein the plug seal, shaft and flexible member are unitary in construction.

25 5. The valve of claim 2 wherein the flexible member is a diaphragm.

6. The valve of claim 1 further comprising a secondary seal disposed between the plug seal and both the inlet and the outlet, the plug seal further being movable into a secondary closed position where the plug seal moves from the open position and towards the inlet and the outlet and engages the secondary seal thereby isolating the inlet and the outlet from the secondary connection.

7. The valve of claim 6 wherein the secondary seal comprises an annular extension from the body between the seal seat and both the inlet and the outlet.

10 8. A valve for isolating a pressure transducer from an inlet line and an outlet line, the valve comprising:

15 a body comprising an inlet for connection to the inlet line, an outlet for connection to the outlet line and a secondary connection for connection to the pressure transducer, the body further comprising a seal seat disposed between the secondary connection and both the inlet and the outlet,

20 the body being flexibly connected to a valve member, the valve member comprising a plug seal, a stem and a diaphragm, the stem being disposed between the plug seal and the diaphragm and connecting the plug seal to the diaphragm, the plug seal being disposed between the seal seat and both the inlet and the outlet, the plug seal being movable between an open position spaced apart from the seal seat and biased towards the inlet and the outlet and a closed position against the seal seat thereby isolating the secondary connection from both the inlet and the outlet.

25 9. The valve of claim 8 wherein the body further comprises an opening to the atmosphere, the diaphragm being connected to the body at the opening so that the diaphragm seals the opening.

10. The valve of claim 8 wherein the shaft is semi-rigid.

11. The valve of claim 8 wherein the plug seal, shaft and flexible member are unitary in construction.

5 12. The valve of claim 8 further comprising a secondary seal disposed between the plug seal and the inlet and the outlet, the plug seal further being movable into a secondary closed position where the plug seal moves from the open position and towards the inlet and the outlet to engage the secondary seal thereby isolating the inlet and the outlet from the secondary connection.

10 13. The valve of claim 12 wherein the secondary seal comprises an annular extension from the body between the seal seat and both the inlet and the outlet.

15 14. A valve for isolating a pressure transducer from an inlet line and an outlet line, the valve comprising:

a body comprising an inlet for connection to the inlet line, an outlet for connection to the outlet line, a secondary connection for connection to the pressure transducer and an opening to the atmosphere, the body further comprising a seal seat disposed between the secondary connection and both the inlet and the outlet,

20 the body being flexibly connected to a valve member, the valve member comprising a plug seal, a stem and a diaphragm, the stem being disposed between the plug seal and the diaphragm and connecting the plug seal to the diaphragm, the diaphragm being sealably connected to the body at the opening to the atmosphere, the plug seal being disposed between the seal seat and both the inlet and the outlet, the plug seal being movable between an open position spaced apart from the seal seat and biased towards the inlet and the outlet and a closed position against the seal seat thereby isolating the secondary connection from both the inlet and the outlet.

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15. The valve of claim 14 further comprising a secondary seal disposed between the plug seal and the inlet and the outlet, the plug seal further being movable into a secondary closed position where the plug seal moves from the open position and towards the secondary seal and inlet and the outlet thereby isolating the inlet and the outlet from the secondary connection.

16. The valve of claim 15 wherein the secondary seal comprises an annular extension from the body between the seal seat and both the inlet and the outlet.

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17. A method of isolating a pressure transducer from a catheter line during an injection of solution from an injection source into the catheter, the method comprising:

15 providing a catheter having a proximal end, a pressure transducer and an injection source,

attaching a pressure activated valve to the proximal end of the catheter, the pressure activated valve providing a three way connection between the injection source, the proximal end of the catheter and the pressure transducer, the valve comprising a body comprising an inlet, an outlet and a secondary connection, the body further comprising a seal seat disposed between the secondary connection and both the inlet and the outlet, the body being flexibly connected to a plug seal, the plug seal being disposed between the seal seat and both the inlet and the outlet, the plug seal being movable between an open position spaced apart from the seal seat and biased towards the inlet and the outlet and a closed position against the seal seat thereby isolating the secondary connection from both the inlet and the outlet,

20 connecting the outlet to the proximal end of the catheter,

25 connecting the secondary connection to the pressure transducer,

connecting the inlet to the injection source,

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injecting solution from the injection source through the inlet of the body and towards the proximal end of the catheter thereby causing a pressure increase and causing the plug seal to move to the closed position thereby isolating the pressure transducer from the pressure increase.